

What is claimed is:

1. A cleaning apparatus for cleaning a surface in which cleaning solution is distributed to the surface and substantially simultaneously extracted along with the dirt on the surface in a continuous operation as it moves along the surface

5 comprising:

a) a housing;

b) a liquid distribution system operatively associated with said housing and including:

a fluid source providing a supply of the cleaning solution;

10 a distributor fluidly connected to said fluid source for distributing the cleaning solution to the surface;

c) a liquid recovery system operatively associated with said housing and including:

a suction nozzle;

15 a recovery tank removably mounted to said housing and in fluid communication with said suction nozzle;

a suction source in fluid communication with said suction nozzle for applying suction to draw the cleaning solution and dirt from the surface through the suction nozzle and into said recovery tank; and

20 d) a filter system provided on said housing and in fluid communication with said recovery tank for filtering the recovered cleaning solution to be reused, said filter system comprising:

a first filter provided on a filter support mounted to said recovery tank, said first filter filtering particles from the cleaning solution and dirt;

25 a second filter fluidly connected between said recovery tank and said distributor, said second filter filtering particles from the cleaning solution and dirt

of a smaller size than the particles filtered from said first filter.

2. The cleaning apparatus of claim 1 wherein said filter system includes a third filter fluidly connected between said second filter and said distributor, said third
5 filter filtering particles from the cleaning solution and dirt of a smaller size than the particles filtered from said second filter.

3. The cleaning apparatus of claim 2 wherein said third filter filters out detergent residue from the cleaning solution.

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4. The cleaning apparatus of claim 3 wherein said third filter is composed of charcoal.

5. The cleaning apparatus of claim 2 wherein said first filter comprises a
15 polytetrafluoroethylene film.

6. The cleaning apparatus of claim 1 wherein said first filter is a coffee filter.

7. The cleaning apparatus of claim 1 wherein said second filter filters out
20 particles greater than or equal to 5 microns.

8. The cleaning apparatus of claim 1 including a pump fluidly connected between said recovery tank and said distributor for drawing the cleaning solution from said recovery tank to said distributor.

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9. The cleaning apparatus of claim 1 including a detergent tank fluidly

connected to said second filter for supplying detergent to the cleaning solution.

10. The cleaning apparatus of claim 9 including an adjusting device
5 operatively connected to said detergent tank and the cleaning solution from said recovery tank, said adjusting device detecting the concentration of detergent in the cleaning solution and adjusting the flow of detergent from said detergent tank to the cleaning solution to a predetermined value based on the concentration of detergent in the cleaning solution detected by said
10 adjusting device.

11. The cleaning apparatus of claim 1 including a handle pivotally connected to said housing.

15 12. The cleaning apparatus of claim 1 including a heater fluidly connected between said recovery tank and said distributor for heating the cleaning solution from said recovery tank.

13. The cleaning apparatus of claim 1 wherein said fluid source is provided in
20 said recovery tank.

14. A cleaning apparatus for cleaning a surface in which cleaning solution is distributed to the surface and substantially simultaneously extracted along with the dirt on the surface in a continuous operation as it moves along the surface
25 comprising:
a) a housing;

b) a liquid distribution system operatively associated with said housing and including:

a fluid source providing a supply of the cleaning solution;

a distributor fluidly connected to said fluid source for distributing the cleaning solution to the surface;

c) a liquid recovery system operatively associated with said housing and including:

a suction nozzle;

a recovery tank removably mounted to said housing and in fluid communication with said suction nozzle;

a suction source in fluid communication with said suction nozzle for applying suction to draw the cleaning solution and dirt from the surface through the suction nozzle and into said recovery tank; and

d) a filter assembly provided on said housing and in fluid communication with said recovery tank for filtering the recovered cleaning solution to be reused; and
e) wherein said filter assembly includes a polytetrafluoroethylene film.

15. The cleaning apparatus of claim 14 including a detergent tank fluidly connected to said filter assembly for supplying detergent to the cleaning solution, an adjusting device operatively connected to said detergent tank and the cleaning solution from said recovery tank, said adjusting device detecting the concentration of detergent in the cleaning solution and adjusting the flow of detergent from said detergent tank to the cleaning solution to a predetermined value based on the concentration of detergent in the cleaning solution detected by said adjusting device.

16. The cleaning apparatus of claim 14 including a handle pivotally connected to said housing.

17. The cleaning apparatus of claim 14 including a heater fluidly connected
5 between said recovery tank and said distributor for heating the cleaning solution.

18. The cleaning apparatus of claim 14 wherein said fluid source is provided in said recovery tank.

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19. A cleaning apparatus for cleaning a surface in which cleaning solution is distributed to the surface and substantially simultaneously extracted along with the dirt on the surface in a continuous operation as it moves along the surface comprising:

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a) a housing;
b) a liquid distribution system operatively associated with said housing and including:

a fluid source providing a supply of the cleaning solution;

a detergent tank removably mounted to said housing and providing a supply

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of detergent to the cleaning solution;

a distributor fluidly connected to said fluid source for distributing said cleaning solution to the surface;

c) a liquid recovery system operatively associated with said housing and including:

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a suction nozzle;

a suction source in fluid communication with said suction nozzle for

applying suction to draw the cleaning solution and dirt from the surface through the suction nozzle; and

d) an adjusting device operatively connected to said detergent tank and the cleaning solution from said fluid source, said adjusting device detecting the concentration of detergent in the cleaning solution and adjusting the flow of detergent from said detergent tank to the cleaning solution to a predetermined value based on the concentration of detergent in the cleaning solution detected by said adjusting device.

20. The cleaning apparatus of claim 19 wherein said fluid source is a recovery tank containing the cleaning solution, said recovery tank removably mounted to said housing and in fluid communication with said suction nozzle such that at least the extracted cleaning solution transported through the suction nozzle deposits into said recovery tank for reuse.

21. The cleaning apparatus of claim 19 wherein said adjusting device comprises a valve device fluidly connected between said detergent tank and said fluid source, a detecting device operatively associated with the cleaning solution for detecting the concentration of detergent in the cleaning solution, said detector outputting a signal representative of the detected concentration of detergent in the cleaning solution, a controller coupled to said detecting device and said valve device, said controller controlling said valve device to allow detergent from said detergent to flow to the cleaning solution from said fluid source at a predetermine amount based on said signal.

22. The cleaning apparatus of claim 19 wherein said adjusting device detects the

pH level of the cleaning solution corresponding to the concentration of detergent
in the cleaning solution.